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EXAMINER	
TURK, NEIL N	

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1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/815,336	**Applicant(s)** LIU, JAMES Z.
	Examiner Neil Turk	**Art Unit** 1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9,13-16,18,19 and 21-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 9, 13-16, 18, 19, and 21-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

This Office Action fully acknowledges Applicant's remarks made on September 11th, 2007. Claims 1-7, 9, 13-16, 18, 19, and 21-26 are pending. Claims 8, 10, 11, 12, 17, and 20 have been cancelled. Claims 21-26 have been newly added.

Claim Objections

Claims 13, 18, 24, and 25 are objected to because of the following informalities: In the chemical compound formulas recited, proper sub-scripting of numerals is necessary. Appropriate correction is required.

Claim Rejections - 35 USC § 102/ Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 4, 9, and 15 are rejected under 35 U.S.C. 102(b) as anticipated by Martin et al. (5,235,235), hereafter Martin, or, in the alternative, under 35 U.S.C. 103(a) as obvious over Martin in view of Frye et al. (5,076,094), hereafter Fry '094.

Martin discloses multiple-frequency acoustic wave devices for chemical sensing in both gas and liquid phase (abstract). Martin discloses that acoustic wave devices function as highly sensitive detectors of changes in surface mass, and specific sensors are achieved by securing a film capable of immobilizing a particular species from the environment to the interaction region of the device (lines 20-39, col. 1). Martin discloses a sensor 1 that includes two or more pairs of interdigital electrodes or transducers (IDTs) 10 having different periodicities. Martin discloses that each IDT is comprised of first and second electrodes 10a, 10b, and the IDTs are patterned on a piezoelectric substrate 12. Martin discloses that each pair of IDTs may launch and receive various Aws, including surface acoustic wave (SAW), also known as a Rayleigh wave, as well as several acoustic plate modes (APMs). Martin discloses that SAW is typically chosen for gas-phase and materials-characterization applications, while shear horizontal APM

(SH-APM) is chosen for liquid-phase applications. Martin shows in figures 3 and 4 the electronic test and measurement circuitry used to launch, receive, and monitor the propagation characteristics (lines 30-67, col. 4, figs. 1-4). Martin discloses an electronic apparatus 40 for measuring changes in AW velocity and attenuation at multiple frequencies. Martin discloses pairs of output IDTs 10 are connected into a feedback loop of an associated amplifier network 42, each functioning as a separate free-running oscillator circuit. Martin further discloses that an associated frequency counter 46, which is under the control of computer 30, detects the frequency of oscillation of each oscillator circuit (lines 6-67, col. 6, figs. 3&4). Examiner asserts that any of the frequency counters 46 communicate with the plurality of oscillators such that all the oscillators and frequency counters are connected within the same circuitry. Martin further discloses an example of a fabricated device in which the interdigital transducers were defined using an etching process from Au-on-Cr metallization (lines 15-57, col. 5).

If the disclosure to specific sensors achieved by securing a film capable of immobilizing a particular species from the environment to the interaction region of the device and the various interaction regions 13 disclosed by Martin are not taken to read as sensing regions with differing sensing films, than it would have been obvious to modify Martin.

Frye '094 discloses a dual-output acoustic wave sensor for molecular identification. Frye '094 discloses that acoustic wave chemical sensors utilize a thin film coating which sorbs or binds the chemical species to be detected and when the sorption/binding is selective for the chemical species of interest, a selective chemical

sensor is obtained. Frye '094 further discloses that because this selectivity is far from perfect, an array of sensors with different coatings is used (lines 33-41, col. 6).

It would have been obvious to modify Martin to include differing sensing films such as taught by Frye '094 so as to provide a more selective AW sensor.

Claims 1-4, 9, 15, 16, 18, 19, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer et al. (5,571,944), hereafter Pfeifer '944, in view of Frye'094.

Pfeifer '944 discloses an acoustic wave based moisture sensor that includes a detector 110 and reference 120 SAW device that are used as feedback elements in oscillator circuits. Pfeifer '944 also discloses sensing film 12 and reference film 14, as well as RF amplifiers 115 and 125 connected across respective transducer pairs 114 and 124, and a frequency counter 18 connected to detect the difference frequency between the two oscillator circuits (columns 3&4+, figs. 1,6, & 7). Pfeifer '944 further discloses that in addition to a SAW device, any acoustic wave device may be used in place of the SAW device, such as shear mode resonators (quartz crystal microbalances), acoustic plate mode devices, and flexural plate wave devices (lines 30-42, col. 7).

Pfeifer '944 does not disclose differing sensing films on the sensing regions.

Frye '094 has been discussed above.

It would have been obvious to modify Pfeifer '944 to include differing sensing films such as taught by Frye '094 so as to provide a more selective AW sensor.

Claims 1-4, 9, 15, 16, 18, 19, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer et al. (5,795,993), hereafter Pfeifer '993, in view of Frye '094.

Pfeifer '993 discloses an acoustic-wave sensor. Pfeifer '993 discloses that the acoustic-wave sensor comprises an acoustic-wave device such as a SAW device, a flexural-plate-wave (FPW) device, an acoustic-plate-mode (APM) device, or a thickness-shear-mode (TSM) (also known as quartz crystal microbalance or QCM) device having a sensing region. Pfeifer '993 discloses that the sensing region includes a sensing film for sorbing a quantity of the photoresist-stripping agent, thereby altering or shifting a frequency of oscillation of an acoustic wave. Pfeifer '993 also discloses that in a preferred embodiment of the invention the acoustic-wave device is a SAW device and the sensing film comprises poly(vinylacetate), poly(N-vinylpyrrolidinone), or poly(vinylphenol) (abstract). Pfeifer '993 discloses that an acoustic-wave sensor 10 comprises an acoustic-wave device 12 having a sensing region 14 including the photoresist-stripping agent sensing film 16 on the surface for sorbing (lines 35-67, col. 3, fig. 1). Pfeifer '993 discloses gas-phase applications utilize a SAW, while other applications utilize FPW, APM, or TSM(QCM) devices. Pfeifer '993 also discloses that while only a single acoustic-wave device 12 is shown in figure 1, one or more additional acoustic-wave devices may be used for the acoustic-wave sensor to detect a plurality of different agents, or to provide a reference for accurately determining the frequency shift and to compensate for environmental factors including temperature and humidity (lines 1-18, col. 4, fig. 1). Pfeifer '993 discloses that the SAW device has a substrate made of

piezoelectric material, such as lithium niobate, crystalline quartz, lithium tantalite, or the like (lines 18-24, col. 4). Pfeifer '993 discloses that electrical means 20 are connected to the device for generating an acoustic wave and includes an amplifying means 26 for receiving a detected signal. Pfeifer '993 discloses that by locating the acoustic-wave sensor in a feedback loop of the amplifying means, a free-running oscillator is formed with the frequency of oscillation changing slightly with the amount of PSA sorbed on or desorbed from the sensing film. Pfeifer '993 further discloses that the frequency detection means 28 is a frequency counter, and may include a reference means (e.g. a second free-running oscillator comprising a second acoustic-wave device connected in a feedback loop of a second amplifier) (lines 20-52, col. 6, fig. 1). Pfeifer '993 further discloses that in another embodiment the electrical means 20 comprises amplifying means 26 connected across each of the acoustic wave and SAW devices, with each SAW device forming a free-running oscillator (lines 43-67, col. 7).

Pfeifer '993 discloses multiple acoustic-wave devices used for the acoustic-wave sensor as well as multiple sensing films, but does not specifically disclose differing sensing films on the sensing regions of the devices.

Frye '094 has been discussed above.

It would have been obvious to modify Pfeifer '993 to include differing sensing films such as taught by Frye '094 so as to provide a more selective AW sensor.

Claims 2, 16, 19, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye '094 as applied to claims 1, 3, 4, 9, and 15 and in further view of Neuburger (5,065,140).

Martin/Frye '094 does not disclose a single frequency counter that communicates with the plurality of oscillators. Martin does not disclose that each of the sensing components comprise a quartz crystal.

Neuburger discloses a gas detection system in which multiple microbalance detectors 122 comprising quartz crystal oscillators are used and the rate of change of crystal oscillation frequency is monitored by a frequency counter 130 under the control of a processor 112 (abstract, columns 2&3, fig. 1).

It would have been obvious to modify the Martin/Frye '094 device to use quartz crystal as sensing devices such as taught by Neuburger as quartz crystal is a known alternative sensing component for use in producing oscillation frequencies that may be measured and monitored by a frequency counter for gas-phase detection applications.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye '094 as applied to claims 1, 3, 4, 9, and 15 and in further view of Tsutsumi et al. (6,075,426), hereafter Tsutsumi.

Martin/Frye '094 does not specifically disclose frequency outputs of at least one of torsional mode data, love wave data, LSAW, and PSAW.

Martin/Frye '094 also does not disclose frequency outputs of at least one of transverse mode data, surface-skimming mode data, surface transverse mode data, harmonic mode data, and overtone mode data.

Tsutsumi discloses a surface acoustic wave device in which the mode of the SAW is not limited to Rayleigh wave, but may be any mode such as leaky surface acoustic wave, surface skimming wave or surface transverse wave (lines 13-16, col. 11).

It would have been obvious to modify Martin/Frye '094 to include modes such as leaky surface acoustic wave, surface skimming wave, or surface transverse wave such as taught by Tsutsumi in order to provide additional modes to the device to increase its utility.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '944 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Tsutsumi.

Pfeifer '944/Frye '094 does not specifically disclose frequency outputs of at least one of torsional mode data, love wave data, LSAW, and PSAW.

Pfeifer '944/Frye '094 also does not disclose frequency outputs of at least one of transverse mode data, surface-skimming mode data, surface transverse mode data, harmonic mode data, and overtone mode data.

Tsutsumi has been discussed above.

It would have been obvious to modify Pfeifer '944/Frye '094 to include modes such as leaky surface acoustic wave, surface skimming wave, or surface transverse wave such

as taught by Tsutsumi in order to provide additional modes to the device to increase its utility.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '993 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Tsutsumi.

Pfeifer '993/Frye '094 does not specifically disclose frequency outputs of at least one of torsional mode data, love wave data, LSAW, and PSAW.

Pfeifer '993/Frye '094 also does not disclose frequency outputs of at least one of transverse mode data, surface-skimming mode data, surface transverse mode data, harmonic mode data, and overtone mode data.

Tsutsumi has been discussed above.

It would have been obvious to modify Pfeifer '993/Frye '094 to include modes such as leaky surface acoustic wave, surface skimming wave, or surface transverse wave such as taught by Tsutsumi in order to provide additional modes to the device to increase its utility.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye as applied to claims 1, 3, 4, 9, and 15 and in further view of Desu et al. (5,527,567).

Martin/Frye '094 does not specifically disclose that the sensing components comprise electrode materials chosen from among the group comprising at least one of TiN, CoSi2, and WC.

Desu discloses high quality layered structure oxide ferroelectric thin films which are useful in the applications of piezoelectric transducers and surface acoustic wave devices (lines 33-43, col. 4). Desu discloses that a thin bottom layer electrode is deposited on top of the substrate, and may be a conductive nitride such as TiN (lines 10-27, col. 6).

It would have been obvious to modify Martin/Frye '094 to include TiN as the electrode material such as taught by Desu in order to provide a known electrode material, in the form of a conductive nitride, on the surface of a substrate for use in a surface acoustic wave device.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '944 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Desu.

Pfeifer '944/Frye '094 does not specifically disclose that the sensing components comprise electrode materials chosen from among the group comprising at least one of TiN, CoSi2, and WC.

Desu has been discussed above.

It would have been obvious to modify Pfeifer '944/Frye '094 to include TiN as the electrode material such as taught by Desu in order to provide a known electrode material, in the form of a conductive nitride, on the surface of a substrate for use in a surface acoustic wave device.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '993 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Desu.

Pfeifer '993/Frye '094 does not specifically disclose that the sensing components comprise electrode materials chosen from among the group comprising at least one of TiN, CoSi2, and WC.

Desu has been discussed above.

It would have been obvious to modify Pfeifer '993/Frye '094 to include TiN as the electrode material such as taught by Desu in order to provide a known electrode material, in the form of a conductive nitride, on the surface of a substrate for use in a surface acoustic wave device.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye '094 as applied to claims 1, 3, 4, 9, and 15 and in further view of Ueda et al. (6,037,847), hereafter Ueda.

Martin/Frye '094 does not specifically disclose that the sensing components comprise electrode materials chosen from among NiCr and CuAl.

Ueda discloses a surface acoustic wave device in which an interdigital electrode of an AlCu alloy is used with an Y-X cut of a $LiTaO_3$ (abstract; lines 7-17, col. 2).

It would have been obvious to modify Martin/Frye'094 to include an AlCu alloy material for the interdigital electrode such as taught by Ueda in order to provide Martin

with a known electrode material for a SAW device (for both surface and leaky surface acoustic waves).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '944 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Ueda.

Pfeifer '944/Frye '094 does not specifically disclose that the sensing components comprise electrode materials chosen from among NiCr and CuAl.

Ueda has been discussed above

It would have been obvious to modify Pfiefer '944/Frye '094 to include an AlCu alloy material for the interdigital electrode such as taught by Ueda in order to provide Pfiefer '944/Frye '094 with a known electrode material for a SAW device (for both surface and leaky surface acoustic waves).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '993 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Ueda.

Pfeifer '993/Frye '094 does not specifically disclose that the sensing components comprise electrode materials chosen from among NiCr and CuAl.

Ueda has been discussed above

It would have been obvious to modify Pfiefer '993/Frye '094 to include an AlCu alloy material for the interdigital electrode such as taught by Ueda in order to provide

Pfiefer '993/Frye '094 with a known electrode material for a SAW device (for both surface and leaky surface acoustic waves).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye '094 as applied to claims 1, 3, 4, 9, and 15 and in further view of Pfeifer '993

Martin/Frye '094 does not specifically disclose a piezoelectric material among a group comprising at least one of: a-quartz, lithium niobate, lithium tantalite, Li2B4O7, GaPO4, langasite, ZnO, and epitaxially grown nitrides including Al, Ga, or In.

Pfeifer '993 has been discussed above.

It would have been obvious to modify Martin/Frye '094 to include lithium niobate, crystalline quartz, or lithium tantalate as a piezoelectric material such as taught by Pfeifer '993 in order to provide a known piezoelectric material for use in surface acoustic wave sensors.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye '094 as applied to claims 1, 3, 4, 9, and 15 and in view of Neuburger as applied to claims 2, 16, 19, 21, and 23 and in further view of Ueda.

Martin/Frye '094/Neuburger does not disclose the sensing components comprise electrode materials chosen from among NiCr and CuAl.

Ueda has been discussed above.

It would have been obvious to modify Martin/Frye '094/Neuburger to include an AlCu alloy material for the interdigital electrode such as taught by Ueda in order to provide Martin/Frye '094/Neuburger with a known electrode material for a SAW device (for both surface and leaky surface acoustic waves).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfiefer '944 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Ueda.

Pfiefer '944/Frye '094 does not disclose the sensing components comprise electrode materials chosen from among NiCr and CuAl.

Ueda has been discussed above.

It would have been obvious to modify Pfiefer '944/Frye '094to include an AlCu alloy material for the interdigital electrode such as taught by Ueda in order to provide Pfiefer '944/Frye '094 with a known electrode material for a SAW device (for both surface and leaky surface acoustic waves).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfiefer '993 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Ueda.

Pfiefer '993/Frye '094 does not disclose the sensing components comprise electrode materials chosen from among NiCr and CuAl.

Ueda has been discussed above.

It would have been obvious to modify Pfiefer '993/Frye '094to include an AlCu alloy material for the interdigital electrode such as taught by Ueda in order to provide

Pfiefer '993/Frye '094 with a known electrode material for a SAW device (for both surface and leaky surface acoustic waves).

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye '094 as applied to claims 1, 3, 4, 9, and 15 and in view of Neuburger as applied to claims 2, 16, 19, 21, and 23, and in further view of Miyazaki et al. (5,412,597), hereafter Miyazaki.

Martin/Frye '094/Neuburger do not specifically disclose sensing components of electrode materials that include at least one of: COSi2 and WC.

Miyazaki discloses vibrating a probe by an ultrasonic wave and measuring an acoustic wave generated in a sample, in which a probe electrode can be formed of any material exhibiting conductivity, such as WC (lines 1-22, col. 9; lines 1-9, col. 14).

It would have been obvious to modify Martin/Frye '094/Neuburger to include electrode materials such as WC such as taught by Miyazaki in order to provide an alternative, known conductive electrode material.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '944 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Miyazaki.

Miyazaki has been discussed above.

It would have been obvious to modify Pfiefer ‘944/Frye ‘094 to include electrode materials such as WC such as taught by Miyazaki in order to provide an alternative, known conductive electrode material.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer ‘993 in view of Frye ‘094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Miyazaki.

Miyazaki has been discussed above.

It would have been obvious to modify Pfiefer ‘993/Frye ‘094 to include electrode materials such as WC such as taught by Miyazaki in order to provide an alternative, known conductive electrode material.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye ‘094 as applied to claims 1, 3, 4, 9, and 15 and in further view of Pfiester (5,264,380).

Martin/Frye ‘094 does not specifically disclose sensing components comprising electrode materials composed of cobalt silicide (CoSi2).

Pfiester discloses a MOS transistor in which the gate electrode 24 is formed a refractory metal silicide such as cobalt silicide (lines 16-30, col. 3).

It would have been obvious to modify Martin/Frye ‘094 to include the electrode material of cobalt silicide such as taught by Pfiester in order to provide an alternative, known electrode material.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '944 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Pfiester (5,264,380).

Pfeifer '944/Frye '094 does not specifically disclose sensing components comprising electrode materials composed of cobalt silicide ($CoSi_2$).

Pfiester discloses a MOS transistor in which the gate electrode 24 is formed a refractory metal silicide such as cobalt silicide (lines 16-30, col. 3).

It would have been obvious to modify Pfeifer '944/Frye '094 to include the electrode material of cobalt silicide such as taught by Pfiester in order to provide an alternative, known electrode material.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfeifer '993 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Pfiester (5,264,380).

Pfeifer '993/Frye '094 does not specifically disclose sensing components comprising electrode materials composed of cobalt silicide ($CoSi_2$).

Pfiester discloses a MOS transistor in which the gate electrode 24 is formed a refractory metal silicide such as cobalt silicide (lines 16-30, col. 3).

It would have been obvious to modify Pfeifer '993/Frye '094 to include the electrode material of cobalt silicide such as taught by Pfiester in order to provide an alternative, known electrode material.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Frye '094 as applied to claims 1, 3, 4, 9, and 15 and in further view of Miyazaki.

Miyazaki has been discussed above.

Martin/Frye '094 does not specifically disclose sensing components comprising electrode materials compose of WC.

It would have been obvious to modify Martin/Frye '094 to include electrode materials such as WC such as taught by Miyazaki in order to provide a known conductive electrode material.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfiefer '944 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Miyazaki.

Miyazaki has been discussed above.

Pfiefer '944/Frye '094 does not specifically disclose sensing components comprising electrode materials compose of WC.

It would have been obvious to modify Pfeifer '944/Frye '094 to include electrode materials such as WC such as taught by Miyazaki in order to provide a known conductive electrode material.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfiefer '993 in view of Frye '094 as applied to claims 1-4, 9, 15, 16, 18, 19, 21, and 23 and in further view of Miyazaki.

Miyazaki has been discussed above.

Pfiefer '993/Frye '094 does not specifically disclose sensing components comprising electrode materials compose of WC.

It would have been obvious to modify Pfeifer '993/Frye '094 to include electrode materials such as WC such as taught by Miyazaki in order to provide a known conductive electrode material.

Response to Arguments

Applicant's arguments with respect to claims 1-7, 9, 13-16, 18, 19, and 21-26 have been considered but are moot in view of the new ground(s) of rejection as discussed above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Neil Turk whose telephone number is 571-272-8914. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NT

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